CLAIMS

1. A method of controlling a continuously-variable drive train of a motor vehicle, said drive train (1) comprising an engine unit (2) having an outlet shaft (8) driving a wheel shaft (9) via a variable-speed transmission (4) adapted to modify the ratio of the speed of rotation of the wheel shaft (9) and of the engine outlet shaft (8) in continuous manner, in which method, a unit time interval (t_i) is defined and over each unit time interval the following steps are performed:

· estimating the value of an acceleration control variable (P_1);

· estimating the value of the vehicle speed (V);

· estimating the value of the speed of ration (ω) of the engine outlet shaft (8); and

· controlling the speed of rotation (ω) of the engine outlet shaft (8) as a function of said estimated values (P_1, V, ω); and

said method being characterized in that said control is performed by implementing the following steps:

· determining a mode of operation from amongst a permanent mode and a transient mode, as a function of a set of variables comprising said estimated values (P_1, V, ω); and

· correcting the value of the speed of rotation (ω) of the outlet shaft in such a manner that:

· if the mode has been determined as being the permanent mode, then the moving average (L') of the gear ratio (L) over a period (T) of a plurality of unit time intervals (t_i) lies between a first threshold value (S_1) that is negative and a second threshold value (S_2) that is positive; and

· if the mode has been determined as being the transient mode, then said moving average (L') of the gear ratio (L) lies outside the range of values defined by the first and second threshold value (S_1, S_2).

2. A control method according to claim 1, characterized in that the first threshold value (S_1) is, in absolute value, equal to the second threshold value (S_2).

3. A control method according to claim 1 or claim 2, characterized in that the period (T) is of a duration greater than one second, and the first threshold value (S_1) and the second threshold value (S_2) has absolute values lying in the range 0.35 km/h to 0.45 km/h per 1000 rpm/s.

4. A control method according to any one of claims 1 to 3, characterized in that the duration (ΔT_0) of a stage in transient mode (T_0) is limited to a value lying between a third threshold (S_3) and a fourth threshold (S_4).

5. A control method according to claim 4, characterized in that the third threshold value (S_3) is substantially equal to 0.3 s.

6. A control method according to claim 4 or claim 5, characterized in that the fourth threshold value (S_4) is substantially equal to 0.7 s.

7. A control method according to any one of claims 1 to 6, characterized in that the absolute value of the mean variation (ΔL_0) of the gear ratio (L) over an operating stage in transient mode between two consecutive mode changes is limited to a value lying between fifth and sixth threshold values (S_5, S_6) that are positive.

8. A control method according to claim 7, characterized in that during the initial mode change of operating stage into transient mode, the direction of variation in the gear ratio (L) is determined and:

· if the direction of variation is positive, then first and second fixed values are allocated respectively

to the fifth threshold value (S_5) and to the sixth threshold value (S_6); and

· if the direction of variation is negative, then third and fourth fixed values are allocated respectively to the fifth threshold value (S_5) and to the sixth threshold value (S_6).

9. A control method according to claim 8, characterized in that the first fixed value is greater than the third fixed value, and the second fixed value is greater than the fourth fixed value.

10. A control method according to claim 9, characterized in that the first fixed value is substantially equal to 35 km/h per 1000 rpm.

11. A control method according to claim 9 or claim 10, characterized in that the second fixed value is substantially equal to 80 km/h per 1000 rpm.

12. A control method according to any one of claims 9 to 11, characterized in that the third fixed value is substantially equal to 25 km/h per 1000 rpm.

13. A control method according to any one of claims 9 to 12, characterized in that the fourth fixed value is substantially equal to 50 km/h per 1000 rpm.

14. A control method according to any one of claims 9 to 13, characterized in that if the mode is determined as being the permanent mode, the value of the gear ratio (L) is limited at each instant to lie within a range of values centered on a mean value equal to the gear ratio (L) at the initial instant of the operating stage in permanent mode plus the product of said mean variation (L') per unit time multiplied by the period of time

between said initial instant and the instant in question, said range being of predetermined amplitude (E).

15. A control method according to claim 14, characterized in that said amplitude (E) is substantially equal to 50 rpm.

16. A control method according to any one of claims 9 to 15, characterized in that the acceleration control variable (P_1) represents the position of the accelerator pedal.

17. A control method according to any one of claims 9 to 16, characterized in that the slope of the road is estimated and the set of variables includes the estimated value for the slope.

18. A control method according to claim 17, characterized in that a mode-determination period is defined, and it is determined that the mode of operation is transient mode in at least one of the following circumstances:

· over said mode-determination period, the variation in the speed value (V) and the variation in the slope value are, in absolute value, less than respective predetermined threshold values, and the variation in the value of the acceleration control variable is, in absolute value, greater than a predetermined threshold value;

· over said mode-determination period, the variation in the value of the acceleration control variable and the variation in the value of the slope are, in absolute value, less than respective predetermined threshold values, and the variation in the speed value is, in absolute value, greater than a predetermined threshold value; and

· over said mode-determination period, the variation in the value of the acceleration control variable (P_1) and

the variation in the value of the speed variable (V) are, in absolute value, less than respective predetermined threshold values, and the variation in the slope value is, in absolute value, greater than a predetermined threshold value.